United Nations A/70/364

General Assembly

Distr.: General
14 September 2015

Original: English

Seventieth session
Item 134 of the provisional agenda*
Proposed programme budget for the biennium 2016-2017

Status of implementation of the information and communications technology strategy for the United Nations

Report of the Secretary-General

Summary

The present report, submitted in accordance with General Assembly resolution 69/262, provides detailed information on all elements of the information and communications technology (ICT) strategy for the United Nations, including an implementation plan with project assurance details such as a timeline, benchmarks and deliverables, and expected benefits and risks. The progress report outlines the ways in which ICT goals are aligned with the overall goals of the Organization and provides a status update on key ongoing and future ICT initiatives and an indicative five-year overall ICT budget projection for the Secretariat.

* A/70/150.

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I. Introduction

1. The revised information and communications technology (ICT) strategy for the United Nations was presented by the Secretary-General at the sixty-ninth session of the General Assembly. The Assembly endorsed all the elements of the strategy and requested that a progress report be submitted at its seventieth Session. The present report responds to the decisions of the Assembly as set out in its resolution 69/262.

2. Since the adoption of resolution 69/262, the Office of Information and Communications Technology has conducted a comprehensive assessment to determine the baseline of ICT assets and resources. The output of the assessment informed the exhaustive project management of the ICT strategy, its benchmarking and governance, and its five-year investment forecast. In order to collect and analyse ICT data and services, all ICT entities across the Secretariat were asked to participate in surveys and interviews.[1] The results enabled the development of the human capital management strategy and investment planning and the plan for system retirements, standardization, consolidation and harmonization; they also informed the strategy's risk management for ICT in the United Nations. While many activities are ongoing, considerable progress has been made eight months into the implementation of the strategy. The report sets out the progress relating to each element of implementation, status updates against key initiatives, and an overall indicative five-year budget projection.

3. The strategy was developed to support the goals of the United Nations; the present report therefore highlights the specific ICT activities that are aligned with the strategic operations of the Organization. The progress illustrated in the report with respect to the achievement of greater security, the reduction of fragmentation of resources and the rationalization of the application landscape enhances the ability of the Organization to fulfil its mandates. The Office of Information and Communications Technology is committed to taking full advantage of the latest technology developments and to sharing services throughout the Secretariat and with the agencies, funds and programmes to support the work of the Organization. In this respect, the Office has continued to engage with existing inter-agency groups, such as the United Nations System Chief Executives Board for Coordination (CEB) and the United Nations Development Group. The Office also hosted a Chief Information Officer conference for senior ICT managers throughout the United Nations system.[2] In addition, the Assistant Secretary-General/Chief Information Technology Officer is the Vice-Chair of the CEB ICT network. These activities demonstrate the continued efforts of the ICT community to work together to achieve harmonization, secure and improved service delivery and, ultimately, the successful implementation of the strategy.

[1] Gartner benchmark data were used as a baseline.

[2] Including the United Nations Educational, Scientific and Cultural Organization, the World Health Organization, the International Telecommunication Union, the United Nations Development Programme, the United Nations Population Fund and the United Nations Entity for Gender Equality and the Empowerment of Women.

II. Implementation of the information and communications technology strategy for the United Nations

A. Alignment with United Nations goals

4. Alignment between ICT and United Nations goals continues to be as challenging as it is critical. However, there is broad acknowledgement that technology is integral to meeting the aspirations of the United Nations. It is also recognized that alignment necessitates technology programmes that foster information-sharing, embody a unified approach and enable partnerships. In consultation throughout the Secretariat, the following ICT activities were determined to be necessary to strengthen the strategic and operational achievements of the Organization:

- Building the technology structure that will ensure successful deployment for Umoja transformation
- Building integrated solutions to support the work of the United Nations in the areas of peace and security, development, human rights and international law, using technology to help to strengthen transparency, coherence and accountability
- Developing innovative solutions to support the sustainable development goals
- Partnering with internal and external stakeholders to use technology in accordance with the priorities of the United Nations
- Consolidating functions to create a coherent capacity for partnering and delivery
- Enhancing the capacity of the United Nations to use technology and innovative programmes in delivering to traditional and new constituencies
- Supporting the goal of early warning and early action through the deployment of analytics
- Reducing cyberattacks and strengthening security and privacy through comprehensive security solutions
- Strengthening ICT frameworks to enable delivery across the Secretariat, in coordination with the United Nations agencies, funds and programmes

5. The above-mentioned activities will be achieved by:

- Consolidating ICT functions and realigning the ICT organizational structure by creating enterprise delivery centres for technology and systems solutions, regional ICT services and data centres
- Developing, documenting and implementing the architecture for core ICT systems and services in the Secretariat
- Monitoring the performance of ICT services by establishing key performance indicators to provide effective services to clients
- Managing and mitigating risks for the Organization through technology

- Maintaining systems in good state of repair and refreshing technology as required
- Prioritizing new investment strategies according to business impact and financial constraints (including clear returns on investment)
- Protecting critical business processes and information assets of the Organization through established business continuity and disaster recovery measures
- Improving the security and privacy of ICT assets and activities
- Regularly assessing new technology and reinforcing training accordingly

6. The strategy and priority initiatives will streamline and strengthen structures in order to enhance ICT investments and leverage technology in support of the work of the United Nations. The continued support and interest of the Member States are important in ensuring the successful implementation of the strategy, not least owing to its interdependency on other key initiatives such as Umoja and the global service delivery model . A critical enabler of shared services in the Organization is a comprehensive, secure, reliable and efficient ICT infrastructure and both the strategy and Umoja have been closely woven into the development of the global service delivery model. As the deployment of Umoja consistently progresses, technology offices worldwide will focus resources towards supporting the substantive work of the Organization, providing better services to Member States.

B. Governance and compliance

Governance

7. The strategy outlined the importance of the governance framework in overseeing ICT policies and guidelines, architecture, standards and investment choices. Operating within this framework, the ICT Executive Committee, the ICT Board and the business community have been regularly reviewing governance mechanisms and implementing procedures, policies and processes to improve monitoring and compliance. The Management Committee has also been reviewing progress on strategy implementation as an independent internal challenge mechanism. In addition, a software development coordination group has been established to manage application delivery throughout the Secretariat. Advisory boards are a key governance component of the regional technology centres and have been established in each region to provide input into the development of the annual regional technology centre workplan.

8. The Office of Information and Communications Technology has been working closely with the Office of Programme Planning, Budget and Accounts and the Office of Central Support Services to ensure the visibility of ICT investments and major acquisitions across the Secretariat. Departmental investment and project proposals are subject to central review and internal challenge by regional technology centres and enterprise applications centres before the submission of programme budget proposals to the Office of Programme Planning, Budget and Accounts. Major investments in technologies and acquisitions will be assessed by the Office of Information and Communications Technology prior to the solicitation process being launched by the Procurement Division.

Compliance (information and communications policies)

9. In collaboration with ICT units across the Secretariat, the Office of Information and Communications Technology has been developing a body of ICT policies to ensure standardized management of ICT resources and to improve coordinated usage and operation of ICT throughout departments and duty stations.

10. An ICT policy compliance function is currently being established, as part of the self-regulatory initiative, to provide support for supervisors in carrying out their management responsibilities. Clear guidance on managing data, ICT resources and tools has been promulgated throughout the Organization; however, further efforts are required to ensure the consistent and comprehensive application of policies and guidelines. One of the lessons learned is that, alongside policy development and circulation, more explanatory communication with staff may be necessary to aid their understanding and to encourage greater compliance.

11. A series of policy documents is currently under review, which will enable the Chief Information Technology Officer to formally delegate authority to manage ICT resources to the regional technology centres and the enterprise applications centres. In the meantime, the Chief Information Technology Officer authorized offices away from Headquarters to implement the strategy in accordance with established structures.

C. Project assurance and performance management

12. All critical ICT projects are overseen by a newly established Enterprise Project Programme Management Office, which has instituted the necessary governance, project repository and training. On a monthly basis, the Office tracks each project by monitoring associated key performance indicators, including scope, timeline, costs and human resources. The overall completion rate of the projects is 45 per

cent, with the remaining 55 per cent on schedule for completion. Annex I below provides an implementation timeline with key project milestones.

13. The recommendation of the Board of Auditors and the corresponding General Assembly resolution (resolution 67/254) established the need for more comprehensive performance information on ICT services. The revised strategic framework for 2016-2017 (see A/70/80), which will be considered by the General Assembly at its seventieth session, presents the deliverables against which ICT performance will be measured.

D. Risk management

14. Risks associated with the strategy are all subject to the Secretariat's enterprise risk management methodology. In recent workshops organized to analyse global ICT risks, over 30 risks were identified. The chart below provides a summary of key risks and requisite mitigation activities.

Risk assessment	*Risk mitigation*
Inadequate ICT skillset	Increased training opportunities to upgrade skills, improve performance and enable staff mobility and career development
Decentralized procurement and lack of transparency of ICT contracts	Implementation of global sourcing and deployment of Umoja
Continued fragmentation, limiting effective implementation of the strategy	Improved service delivery, implementation of delegation of authority, strengthening of governance, controls and monitoring tools
Change fatigue, resistance to change	Increased stakeholder engagement and outreach and improved service delivery metrics
Lack of information security awareness	Monitoring of the completion rate of mandatory information security, and increased security threat communications
Lack of visibility of ICT assets	Implementation of asset monitoring and controls
Insufficient and fragmented funding relative to the increasing scale and complexity of ICT	Realization of efficiencies in ICT operations and reinvestment towards more strategic activities

III. Status update on key initiatives

A. Mainstreaming of Umoja

15. The mainstreaming of Umoja is under way and relevant functions are associated with a high-level project plan, which is routinely checked against risks and constraints. These functions include user access provisioning, disaster recovery,

help desk, network and infrastructure, and phase 1 of application interfaces to the Office of Information and Communications Technology. The Office and the Umoja team continue to collaborate closely in order to ensure a successful transition and are conducting a detailed assessment to identify the Umoja support model and the total cost of ownership for ICT. As a result of the assessment, the five-year budget planning assumptions for 2015-2019 have been determined, taking into account staffing and support, connectivity, upgrades and enhancements, and software licence and maintenance.

16. In the fifth progress report on Umoja (A/68/375), it was stated that $29 million to $49 million would be saved as a result of application decommissioning. The assessment of applications identified 461 for possible decommissioning through the deployment of Umoja. Over five years, the potential reduction from application decommissioning is estimated at $37.6 million. Applications for potential decommissioning are listed in the chart below.

Application category	*Number of applications*
Enterprise resource planning — Secretariat (Integrated Management Information System)	8
Finance and budget	104
Human resources	125
ICT operations	23
Information security	6
Programme management	1
Reports and analytics	37
Supply chain and logistics	125
Support services	1
Travel management	31
Total	**461**

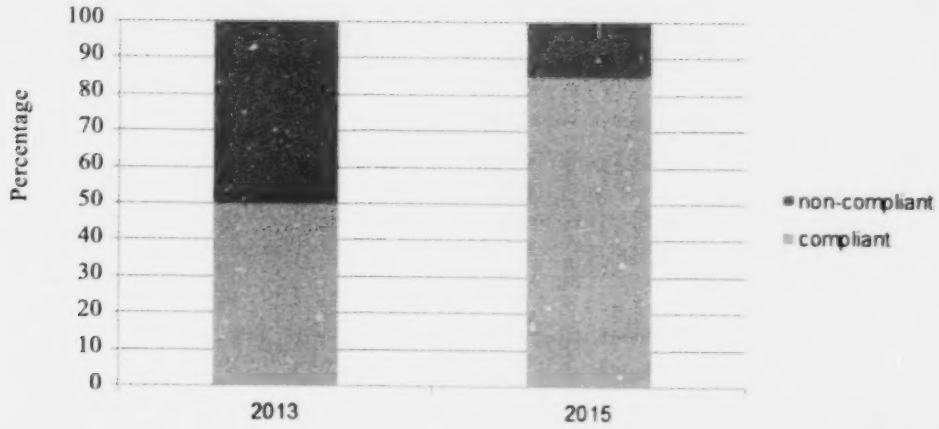
B. Information security and disaster recovery

Status update: 10-point action plan to strengthen information security

1. Workstation configuration: limit administrative privileges

17. An updated standard security configuration was implemented for all workstations as part of the migration to the Windows 7 operating system. This process is 95 per cent complete in New York; the remaining workstations are approved exceptions required to perform specific functions that cannot be migrated without significant effort. The implementation of related projects at other duty stations is ongoing. On a daily average, there are more than 800 instances of malicious software blocked by security software on workstations at United Nations Headquarters alone: this is approximately 7,000 globally. An additional 11 incidents are discovered daily by the global intrusion detection system.

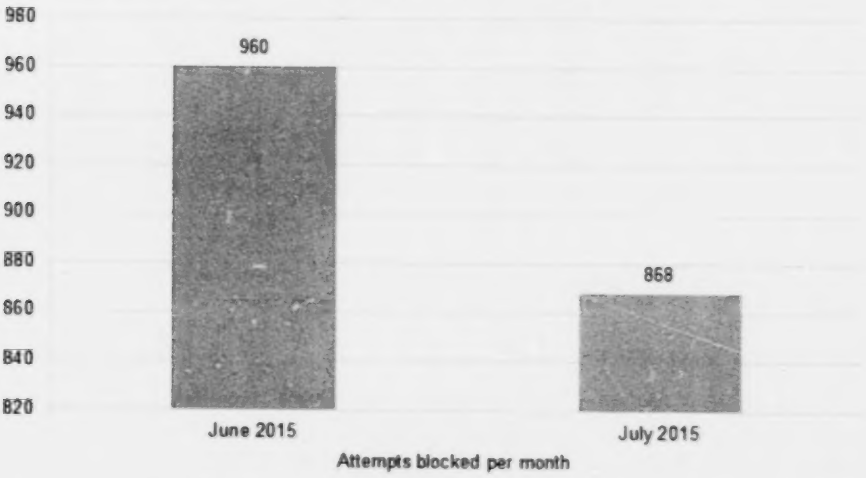
Number of workstations configured in compliance with policies and procedures (i.e. without administrative privileges)



2. E-mail: improved filtering for malicious code

18. A comprehensive e-mail gateway filtering system has been deployed for spam, trojans and unknown malicious software in order to provide more effective security capabilities. The system provides protection for the Secretariat's primary e-mail domain "@un.org" (comprising approximately 50,000 users) and allows the Organization to detect and block more than 1,700 malicious e-mail attachments daily. Additional measures were carried out to improve capabilities to protect against cyberthreats, on a daily average detecting and blocking more than 2,000,000 potentially malicious Internet connections at Headquarters, offices away from Headquarters and regional economic commissions.

Blocked attempts to access malicious content in websites[a]



[a] Prior to the deployment of advanced web filters in June 2015, these malicious actions remained undetected, exposing the Organization to significant unmitigated risks.

3. Mandatory information security awareness training for all staff

19. A computer-based interactive information security awareness course has been developed and made available to all Secretariat users globally. It has also been shared with and made available to other United Nations entities, including agencies, funds and programmes, to help to raise awareness of information security issues.

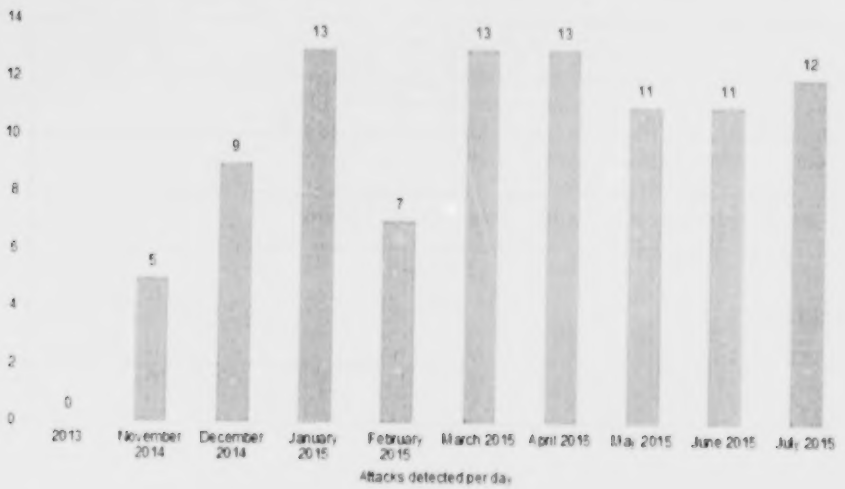
4. Network security: segmentation of network zones

20. The segmentation of network zones is a critical information security control. In order to implement network segmentation, new firewalls with "next-generation" capabilities are being implemented. The network topology for data centres was reviewed and redesigned to establish a three-tier environment and to further segregate environments.

5. Deployment of an intrusion detection system

21. Intrusion detection solutions have been deployed to Headquarters, offices away from Headquarters and regional economic commissions, as well as the enterprise data centres . The system processes thousands of events on a daily basis through automation and verifies all alerts locally. There are over 4,000 critical intrusions detected every year; trends indicate that this number will triple each year.

Intrusion detection system[a]



[a] Prior to the deployment of the intrusion detection system, these malicious actions remained undetected, exposing the Organization to significant unmitigated risks.

6. Subscription to a cybersecurity service/feed

22. Cybersecurity feed-sharing capabilities have been established as part of existing services and a new Cybersecurity Group has been established to work with departments to build capacity, train and provide services. The Secretariat is also participating in an inter-agency pilot project to share information and cyberattack experiences.

7. Approve and promulgate pending draft policies

23. A number of policies, guidelines and technical procedures have been promulgated, including an information security policy directive and seven technical procedures specifically related to information security.

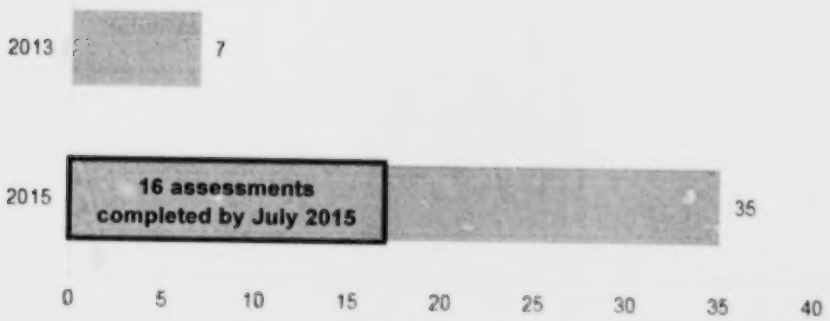
8. Classify information assets

24. A high-level policy on information sensitivity, classification and handling (ST/SGB/2007/6) exists and further guidance has been developed.

9. Mandate implementation of minimum requirements for public websites

25. The minimum requirements for public websites have been promulgated and a compliance reporting mechanism has been established. Detailed information security reviews of more than 25 public website applications were carried out to identify vulnerabilities. In addition, semi-annual assessments of websites have been scheduled.

Capacity to conduct information security assessments per year



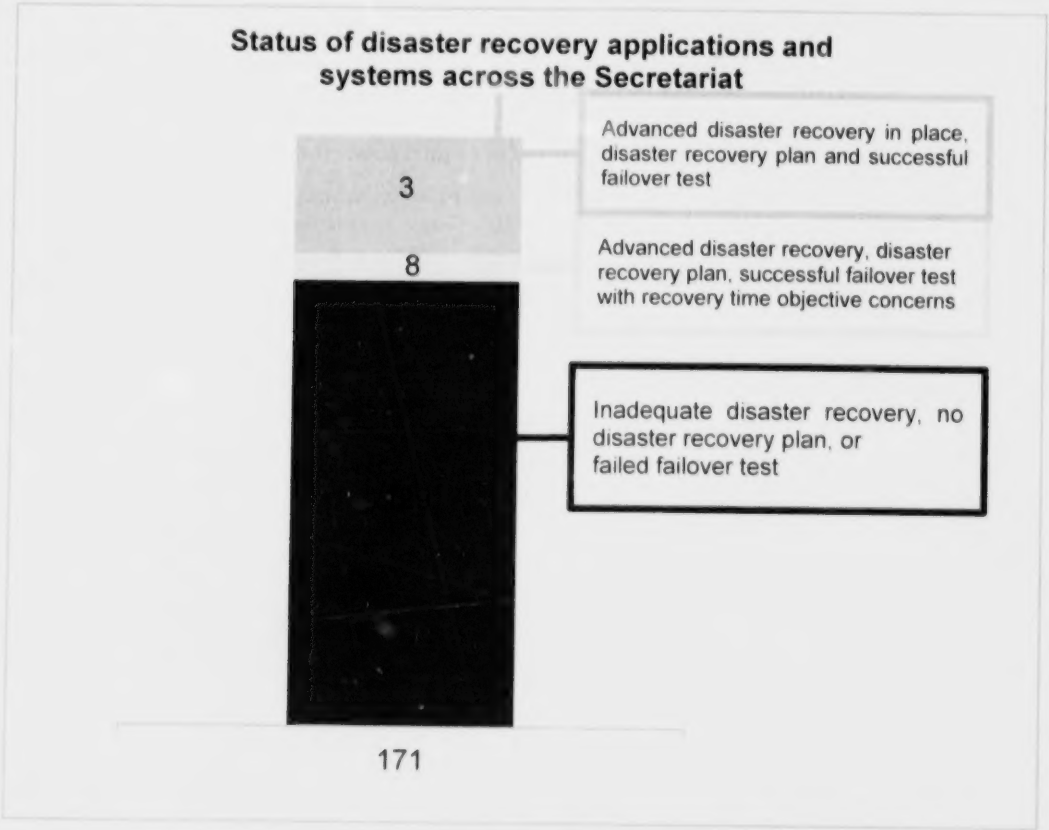
10. Mandatory reporting of information security incidents and sharing of actionable information across the Secretariat

26. A technical procedure to standardize the response to information security incidents was developed and promulgated in 2015. Subsequently, a common taxonomy for information security incidents has been defined and deployed.

Disaster recovery

27. As a part of the implementation of the operational resilience management system across the Secretariat, 171 critical systems and applications supporting critical processes were identified. An internal review in July 2015 revealed a systemic weakness in disaster recovery. Most duty stations have basic disaster recovery that allows for local recovery of critical systems in 24 hours; this capability is fragmented and inefficient and does not consistently ensure resilience. A small number of enterprise applications, including Umoja, are hosted in the enterprise data centres, with successful annual disaster recovery tests. Continued efforts are being made to improve disaster recovery in the enterprise data centres

and the number of critical applications will be reduced.[3] Significant investment and substantially increased annual operations and maintenance costs will be required to provide advanced disaster recovery capabilities. The chart below illustrates the current status of disaster recovery for existing critical applications.


Status of disaster recovery applications and systems across the Secretariat
3
8
171
Advanced disaster recovery in place, disaster recovery plan and successful failover test
Advanced disaster recovery, disaster recovery plan, successful failover test with recovery time objective concerns
Inadequate disaster recovery, no disaster recovery plan, or failed failover test

[3] Industry best practices indicate that large multinational organizations should have no more than 15 to 20 "business critical" applications.

C. Enterprise application centres

28. Effective information security and disaster recovery in the United Nations is dependent on a robust application landscape. To that end, enterprise applications centres have been established in New York, Vienna and Bangkok in order to reduce the fragmentation of application development across the Secretariat. As part of a cohesive programme, application development can take place in offices under the management of the enterprise applications centres. The centres have also developed a multi-phased harmonization plan, the first phase of which is the establishment of a United Nations global application portfolio repository.[4]

29. On the basis of reports received from Headquarters, offices away from Headquarters, regional economic commissions and field missions, 2,300 applications have been validated: as at 1 June 2015, there were 2,160 active applications and 140 applications in "sunset" and/or retired mode. This information has been assessed, categorized and used for the development of the application rationalization road maps, based upon several guiding principles. These principles include decommissioning applications with low business value and high maintenance costs, replacing duplicative applications with standard enterprise solutions, and modernizing those that rely on obsolete or non-standard technologies. All enterprise and critical applications must meet information security, business continuity and disaster recovery standards and requirements. The applications in use were categorized by the following functional areas:

Category	*Number of applications*
Knowledge management	516
ICT operations	264
Human resources	211
Finance and budget	158
Supply chain and logistics	151
Safety and security	132
Conference management	108
Support services	101
Travel management	75
Reports and analytics	67
Customer relationship management	63
Programme management	58
Statistics	40
Air operations	33
Other	33
Court management	25
Development tools	25
Information security	23
Drugs and crime	21

[4] See https://uniteapps.un.org.

Category	*Number of applications*
Peacekeeping	21
Human rights	15
Medical services	11
Enterprise resource planning — Secretariat	9
Total	**2 160**

30. The most common types of applications within broader categories include:

Category	*Number of applications*
Document repositories	200
Correspondence tracking	149
Telephone billing/call logs	55
Inventory/asset tracking	48
Collaboration tools and forums	41
Time and absence	37
Request for services	28
Procurement	26
Digital assets	24
Contract management	14
Reference and terminology databases	14
Library applications	12
Human resources roster databases	10
Total	**658**

31. The analysis of the global application portfolio indicated the following harmonization opportunities:

Application road maps	*Number of applications*
Consolidate with Umoja	461
Consolidate with Unite Docs	136
Consolidate with Inspira	51
Consolidate with eBilling	38
Consolidate with iNeed	36
Consolidate with Unite Connections	36
Consolidate with other systems	135
Subtotal	**893**
Maintain	523
Harmonize/define common solutions	438

Application road maps	*Number of applications*
Review	250
Modernize/technology upgrade	30
Retire without replacement	26
Total	**2 160**

32. A total of 893 applications can potentially be consolidated into enterprise systems and an additional 438 applications can be harmonized by developing common automation solutions or adopting existing applications (best of "breed" approach). As applications are harmonized and decommissioned, historical data will be maintained in one data warehouse for business intelligence and analytics requirements. Applications with functionality common to enterprise applications will be harmonized into those applications. ICT industry studies indicate that application rationalization in large organizations take up to five years; it is therefore expected that application consolidation and harmonization at the United Nations will be completed by 2020 and will result in the significant reduction of applications (approximately 1,000 systems or 46 per cent of current inventory).

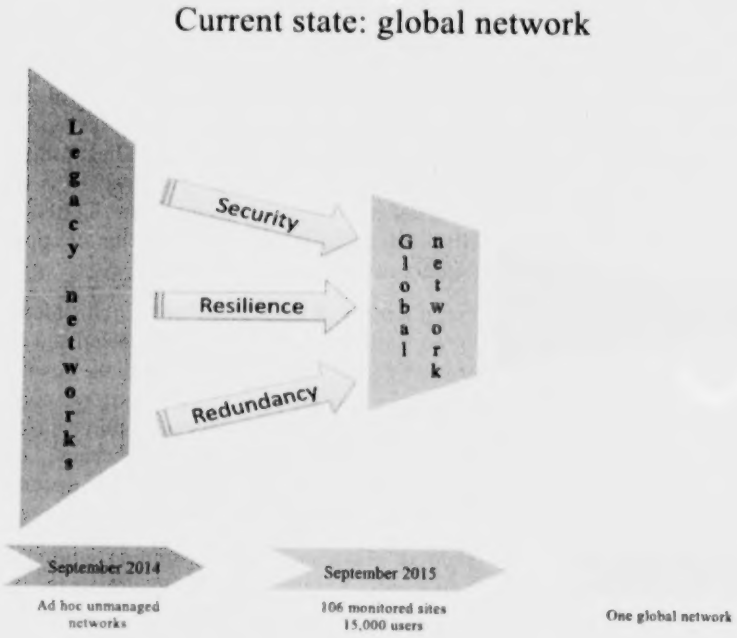
33. An integral component of application management is the consideration of ways in which the work of the United Nations is sufficiently supported and in which the Secretariat can operate more efficiently. Solutions are being developed to improve systems and standardization in the areas of inspections of contingent-owned equipment; rations and fuel management in peacekeeping; information exchange to combat illegal drug movement and organized crime; customer relationship management; specialized online training; Umoja support; document and records management; and case, identity and talent management.

34. Inroads have also been made to remediate and harmonize United Nations websites. The goal is to move towards a customer-centric approach in which websites have full accessibility across a wide range of devices globally, while migrating to a shared secure platform approach that will reduce costs and ensure standards. A technology platform that ensures that websites can be multilingual and that all official languages can readily be used has been established. Content originators remain responsible for multilingual websites, but the platform facilitates the process by ensuring that technology has been implemented to provide an equivalent level of automation for publishing in each of the official languages.

D. Global wide-area network

35. The reliability and security of the Organization's network infrastructure is critical to voice, video, applications and data-related services. The ICT community has been interconnecting offices within a network framework designed to ensure consistently reliable and secure service delivery. This managed network allows for redundancy and for the prioritization of traffic. It also enhances capacity-planning and decision-making. Work has proceeded rapidly, in collaboration throughout the Secretariat, on migrating from the unmanaged legacy network to the standardized

global network, which services 106 Secretariat site locations and 15,025 users.[5] Peacekeeping missions, due to their environment, operate a different satellite-based network which, when coupled with the standardized global network, forms the integrated network for the Secretariat. Much work is still required, as additional Departments and Offices need reliable connectivity to the enterprise network to meet the demand for enterprise applications, services and future innovations. The chart below illustrates achievements in developing the global network infrastructure.



E. Regional technology centres

36. The regional technology centres have been established and are partially operational, complementing the regions established for peacekeeping operations. They play a pivotal role in facilitating the cohesive implementation of the Organization's strategic initiatives. Regional technology centres adhere to a governance model and an annual regional technology centre work plan with goals to implement information security initiatives; harmonize service delivery; standardize the global ICT network; deliver support for successful Umoja delivery; and establish procedures to better utilize global contracts. Existing capacities at United Nations Headquarters and at key offices away from Headquarters have been leveraged to assign regional technology centre status to the existing regional centres at the United Nations Office at Nairobi (for Africa), in New York (for the Americas), at the Economic and Social

[5] Including United Nations Headquarters, offices away from Headquarters, regional economic commissions, enterprise data centres and cluster three entities, the United Nations Environment Programme, the United Nations Human Settlements Programme and the Office for the Coordination of Humanitarian Affairs of the Secretariat.

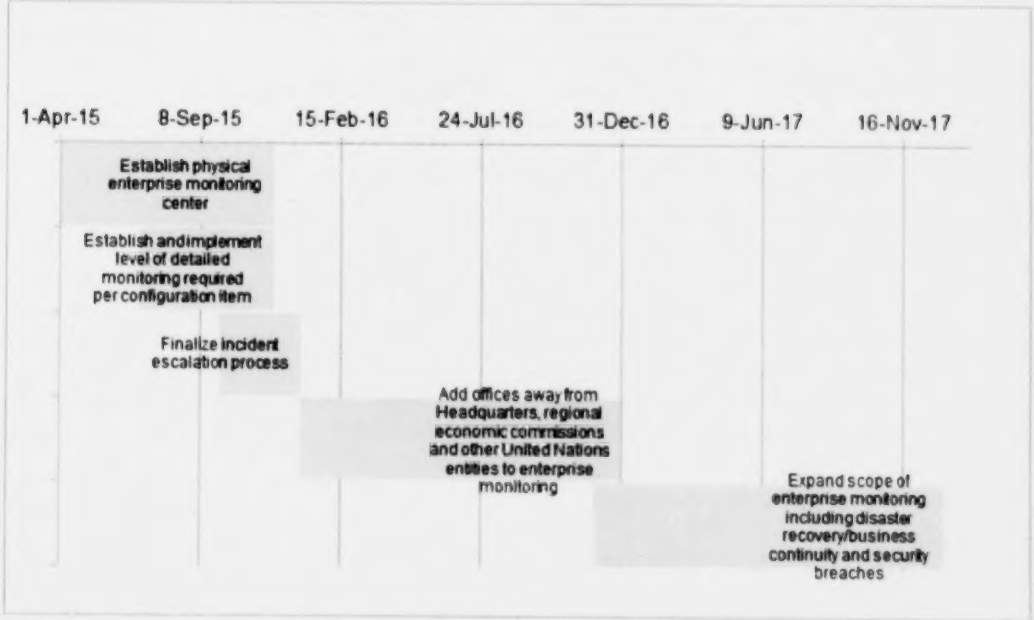
Commission for Asia and the Pacific (ESCAP) (for Asia) and at the United Nations Office at Geneva (for Europe).

37. Local ICT entities are responsible for managing day-to-day operations, providing ICT services in support of local departments and offices. The regional technology centres work closely with the enterprise applications centres and coordinate the operations of the Enterprise Service Desk. They are also significantly contributing to the successful roll-out of Umoja by coordinating connectivity to the global network and providing support to Umoja users through the Enterprise Service Desk. The focus of the regional technology centres on information security brings a holistic approach to managing implementation and compliance with standards, policies and best practices.

F. Global monitoring (enterprise network operations communications and security)

38. Enterprise network monitoring centres have been established and will be staffed to provide end-to-end, around-the-clock visibility of the global network across technical and administrative domains. Comprehensive ICT and infrastructure monitoring across the Organization will be achieved in a phased manner over the next four years as outlined in the chart below. (Network monitoring has already been deployed for Department of Field Support networks.)

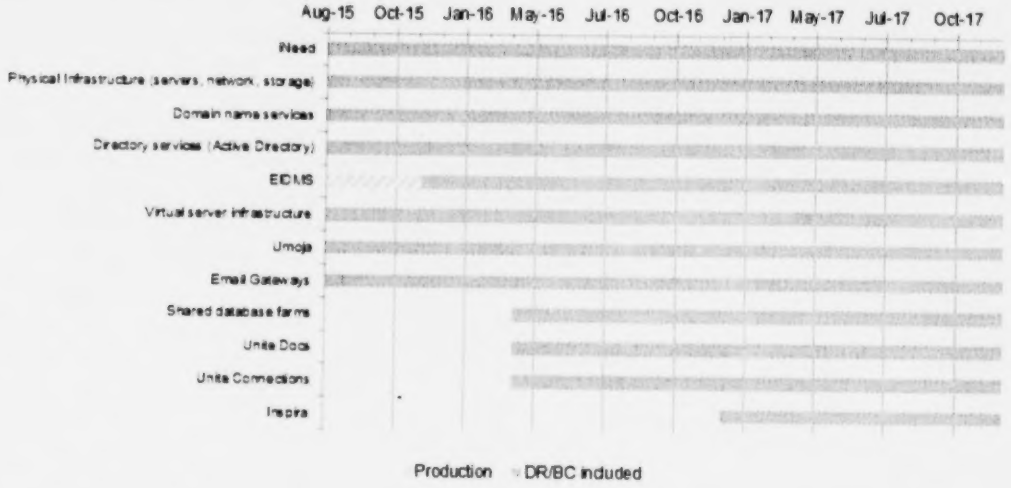
Global monitoring implementation


1-Apr-15
8-Sep-15
15-Feb-16
24-Jul-16
31-Dec-16
9-Jun-17
16-Nov-17
Establish physical enterprise monitoring center
Establish and implement level of detailed monitoring required per configuration item
Finalize incident escalation process
Add offices away from Headquarters, regional economic commissions and other United Nations entities to enterprise monitoring
Expand scope of enterprise monitoring including disaster recovery/business continuity and security breaches

G. Enterprise data centres

39. The enterprise data centres are fully operational with data-hosting capacity. The information security infrastructure has been migrated and fully upgraded and is being administered from the enterprise data centres. Core enterprise systems servicing ICT across the Secretariat have been established at the enterprise data centres. Umoja, iNeed and e-mail secure gateways have also been established, with disaster recovery and business continuity in place and tested. The provisioning of, and operations and support for, core infrastructure services are now centralized.

Status of migrations: enterprise data centres



H. Global engineering and conferencing

40. Recent years have seen a significant increase in the demand for conference support across the Secretariat. Formal meetings at Headquarters increased from 2,894 in 2008 to 6,343 in 2014 and the number of videoconferences supported during the same period increased from 1,096 to 4,963. Historically, systems to support these meetings were developed in isolation, resulting in fragmentation. To address this issue and to bring about a coherent conferencing technology landscape, a global engineering and conferencing capacity is operational, using current resources to develop and implement work programmes.

I. Enterprise Service Desk

41. The Enterprise Service Desk provides tier 1 level support for Umoja and other enterprise applications for staff across the Secretariat (for peacekeeping field missions, tier 1 level support for Umoja is provided locally). The Enterprise Service Desk became operational in September 2014 and provides global, around-the-clock coverage from five enterprise service desks located in Bangkok; Brindisi, Italy; Geneva; Nairobi; and New York. The principal objectives of the Enterprise Service

Desk are to constitute a cost-effective and more efficient shared-service global model, serve as a single point of contact for service requests, and achieve scale and facilitate in-house development of Umoja support expertise. All application help desks are being consolidated into the Enterprise Service Desk, which will allow for target reductions to be reached. The performance of the service desk for Umoja has been at 70 per cent resolution on the first call, with an average resolution time of eight hours.

J. Defragmentation

42. As part of the harmonization efforts in the Department of Management, during the 2016-2017 biennium, ICT functions in the Office of Central Support Services, the Office of Human Resources Management and the Office of Programme Planning, Budget and Accounts are proposed to be consolidated under the Office of Information and Communications Technology, namely, the enterprise applications centres in New York and Bangkok, the Enterprise Service Desk of the Global Services Division and the Global Operations Division. Harmonization of other departments such as the Department for General Assembly and Conference Management and the Department of Safety and Security is under way and discussions have been initiated with the Department of Public Information and the Office for the Coordination of Humanitarian Affairs. At the same time, ICT consolidation efforts are taking place between the United Nations Office at Geneva and the Department for General Assembly and Conference Management.

K. Enterprise business intelligence and analytics

43. There are 22 business warehouses in the United Nations housing data and information; however, these data are of limited value since they serve only local requirements and do not permit aggregation across the Organization. An enterprise business intelligence and analytics capacity has therefore been established, in addition to a Data Governance Board, to provide access to information, support decision-making, improve insight and strengthen accountability.

IV. Budget, human resources and global sourcing

Budget and human resources assessment

44. In the assessment of budget and human resources, the Office of Information and Communications Technology undertook comparative analyses in order to assist Member States and the Organization with decision-making relating to investments, planning, budgeting, ongoing operational assumptions and identification of quantitative best practices. Industry data were used to improve the alignment of business units with integration opportunities and to ensure the prioritization of approved funding towards critical areas starting from the 2014-2015 biennium, while delivering on mandates. They were also used to determine the optimal level of investment in ICT required beyond 2015. ICT spending can be justified through benchmarking and metric analysis in order to develop proposals for the biennium 2016-2017 (see A/70/6 (sect. 29E), correct the configuration of organizational structures and resultant staffing costs and identify opportunities for cost

optimization and future investments. Benchmarking industry data were also applied for the preparation of planning assumptions for the biennium 2018-2019. Continuing use of the benchmarking data will facilitate the appropriate combination of insourcing and use of contractual services at fair-market prices and available service levels.

45. During the biennium 2014-2015, the United Nations is spending[6] $5,427 per user, if 10,278 regular budget posts (see A/70/6, Introduction) and 123,945 personnel[7] deployed in peacekeeping operations are taken into account. Exclusive of the resources allocated to Umoja, the Organization will be spending 2.9 per cent of its regular budget, 5.5 per cent of its peacekeeping budgets, 4.3 per cent of resources allocated to special political missions, 0.1 per cent of extrabudgetary resources and 9.1 per cent of support account resources towards ICT during the biennium 2016-2017 (see annex II below). The planning assumptions for 2018-2019 use the 2016-2017 biennium baseline, in which the United Nations will be spending approximately 3.0 per cent of its budget financed from various sources towards ICT programmes and activities. The benchmarking data will be considered in the creation of future state (both short- and long-term) objectives to quantify 2018-2019 ICT budget proposals, subject to a budget outline to be established by Member States.

Outcomes of the assessment and planning assumptions

46. A trend analysis of ICT staff and non-staff resources for the three bienniums (2014-2015, 2016-2017 and 2018-2019) is set out in annex III below. Most of the 2014-2015 non-staff resources in Headquarters, offices away from Headquarters and regional economic commissions are spent on infrastructure acquisitions and support. In line with the strategy, resources will be directed towards strengthening governance and compliance, application deployment, development and support, acquisition and rationalization, and business intelligence and analytics by 2018-2019.

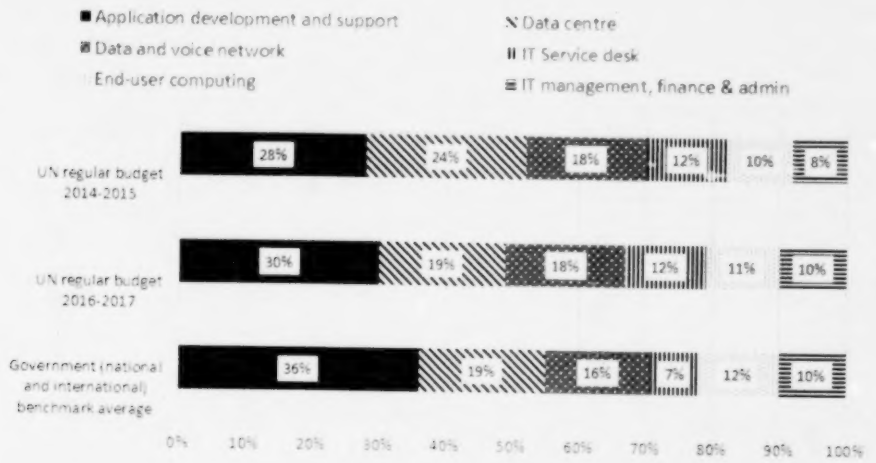
47. Figure I below shows the spending trends in various ICT areas. In the application deployment, development and support area, for example, the Organization presently spends 28 per cent of the approved appropriations; by comparison, industry invests 36 per cent. The analysis indicates that sufficient resources should be allocated to this and other priority areas of ICT. The areas where a potential shift in investment decisions is envisaged are service desk and information technology management and end-user computing.

[6] This amount would be lower if all temporary personnel, junior professionals and consultants were taken into account.

[7] See peacekeeping fact sheet at www.un.org.

Figure I

Resources allocated to information and communications technology functional areas (in percentage)



Source: Gartner IT Key metrics data 2015.

48. The Office of Information and Communications Technology identified and estimated the cost impact of the strategy on the Secretariat, offices away from Headquarters and regional economic commissions for the regular budget in respect of the acquisition of new assets and replacements. Industry benchmarks indicate that an increase of approximately 5 per cent in investments is expected to replace assets that have reached the end of their life cycle. It was determined that the demand for additional investments can be mitigated through the implementation of an alternative assets replacement schedule, applications rationalization, switch of the present e-mail system and transition to enterprise data centres, among other factors. By reviewing assets in use and initiating timely disposal (therefore reducing maintenance costs), the Organization will be in a position to align its budgets with the optimal replacement schedule and with required new acquisitions. The overview of the expected impact on the Secretariat of asset replacements is provided in figure II below.

Figure II

Estimated cost impact of the information and communications strategy on Secretariat, offices away from Headquarters and regional economic commission asset requirements (in addition to required asset replacements)

Excludes peacekeeping, Support Account for Peacekeeping Operations, special political missions, Umoja

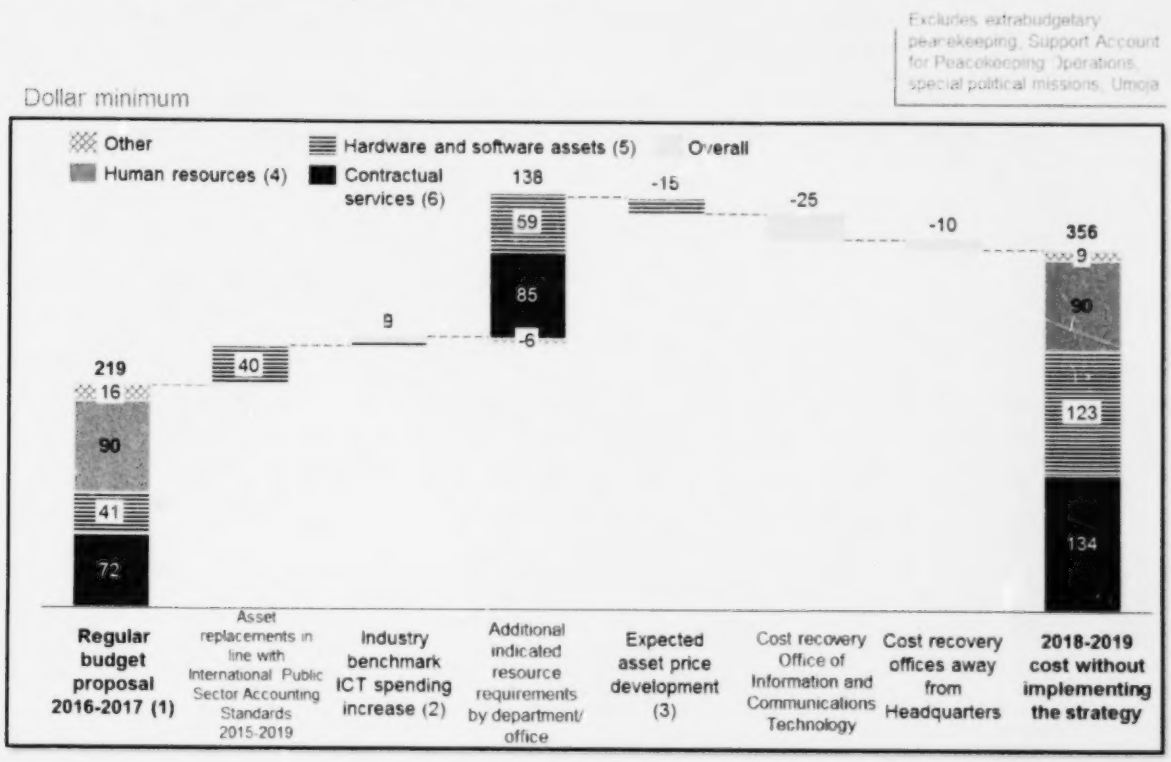
↑ Represents additional asset investment requirements ↓ Represents potential savings in asset costs

Initiative	Asset: Servers	Storage	Network equipment	Video-conferencing	Radio and mobile satellite communication	Telephone exchanges PBX	Software licences	Personal computing	Overall
Flexible workspaces	↑	↑	↑				↑	↓	↑
Information security			↑				↑	↑	↑
Internet-based wide-area technology			↑		↓				↑
Centralized configuration management	↑	↑					↑		↑
Conference centre deployment				↑					↑
Global communication	↑	↑	↑	↑	↓	↓	↑		↑
Transition to enterprise data centre	↓	↓							↓
Application rationalization	↓	↓					↓		↓
Switch of e-mail system	↓	↓					↓		↓
Industry benchmark	↓	↔	↑	↑	↓	↓	↓	↓	↑ 5% per annum
Overall trend	↓	↓	↑	↑	↓	↓	↓	↓	↑

Source: IBM assessment, data provided by Gartner analysts.

49. Without implementing critical initiatives outlined in the strategy, the Secretariat will likely require a major increase in regular budget resources to continue to fund infrastructure and service demands for centrally funded activities. Details of the resource growth areas are outlined in figure III below. It is estimated that, with the implementation of the road map and measures outlined in the strategy, the increase in investment requirements in ICT would be contained to between plus 13 per cent and plus 27 per cent over the 2016-2017 budget proposal levels as presented in figure IV below.

Figure III
Potential cost increase without implementing the strategy[a]



Source: Programme budget reports for 2016-2017, supplementary information, IBM assessment, data provided by Gartner analysts.
Notes:

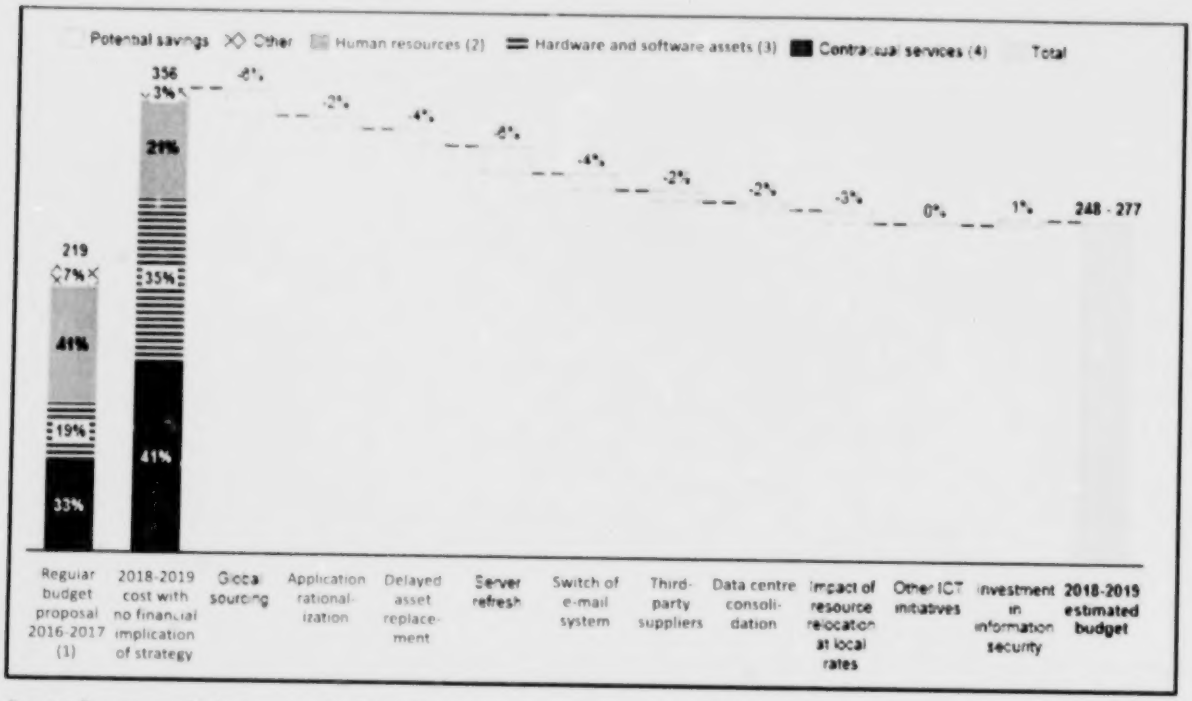
1. Based on the 2016-2017 regular budget proposals.
2. Gartner estimates that per year ICT expenditure will grow 0-5% for national and international government.
3. Estimated price drop of 5-10% per year over the period 2018-2019.
4. Excludes general temporary assistance costs.
5. Corresponds to "Data processing furniture and equipment" as covered by regular budget cost areas.
6. Combines "Data processing services", "Data processing supplies" and "Rental and maintenance" as covered by regular budget cost areas.

[a] The distribution of resources across five major categories of expenditure during the 2016-2017 and 2018-2019 bienniums is as follows: studio production and conferencing (5 per cent, no change); personal computing hardware (reduction from 7 per cent to 6 per cent); service desk (reduction from 13 per cent to 11 per cent); servers (increase from 9 per cent to 12 per cent); storage (13 per cent, no change); voice and data (increase from 19 per cent to 22 per cent); governance and compliance (7 per cent, no change); solutions (decrease from 27% to 24%).

Figure IV

Resource impact of the strategy on the regular budget[5]

Dollar minimum, percentage of 2018-2019 cost without implementing the strategy unless otherwise indicated. Excludes extrabudgetary, peacekeeping, Support Account for Peacekeeping Operations, special political missions, Umoja.



Source: Programme budget reports for 2016-2017, supplementary information, IBM assessment, data provided by Gartner analysts.

Notes:

1. Based on the 2016-2017 regular budget proposals.
2. Excludes general temporary assistance costs.
3. Corresponds to "Data processing furniture and equipment" as covered by regular budget cost areas.
4. Combines "Data processing services", "Data processing supplies" and "Rental and maintenance" as covered by regular budget cost areas.

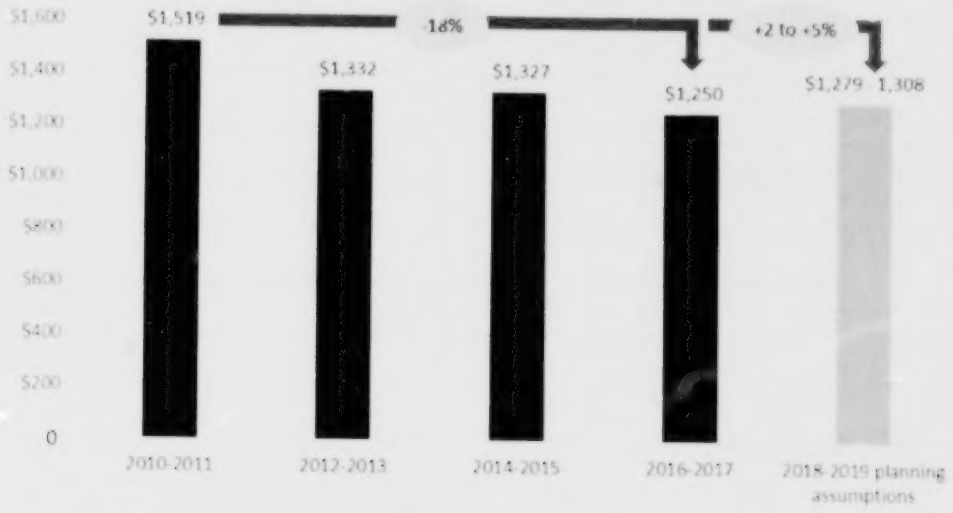
50. Figure V below presents an overview of the estimated directional impact of ICT initiatives on all the budgets of the Secretariat, offices away from Headquarters and regional economic commissions. The increase in the regular budget requirements demonstrated in figure IV corresponds to the increase of between 2 per cent to 5 per cent for ICT requirements across all sources of funding. The trend is summarized in figure V below (this analysis is based on the assumption that all non-regular budget resources will remain at the current level).

[5] Distribution of resources across five major categories of expenditure during the 2016-2017 and 2018-2019 bienniums is as follows: studio production and conferencing (5 per cent, no change); personal computing hardware (7 per cent, no change); service desk (12 per cent, no change); servers (decrease from 10 per cent to 8 per cent); storage (reduction from 13 per cent to 11 per cent); voice and data (reduction from 20 per cent to 18 per cent); governance and compliance (increase from 7 per cent to 9 per cent); solutions (increase from 26 per cent to 29 per cent).

Figure V

Overview of the information and communications technology budgets per biennium for all sources of funding and estimated increase in investment requirements, excluding Umoja

(Millions of dollars)



Human Resources Management Framework

51. Another key component of the strategy is the alignment of ICT skill sets with emerging business needs. The Advisory Committee on Administrative and Budgetary Questions recognized the need for training for ICT staff to upgrade skills and recommended that a detailed analysis be undertaken and that proposals be made within the context of established rules and regulations and the human resources management policy framework (see A/69/610, para. 52). The Office of Information Communications Technology and the Office for Human Resources Management have therefore been jointly examining existing and future ICT human resource requirements. A skills survey and gap analysis of generic job profiles and functions determined that, in addition to the harmonization requested by the General Assembly, many generic job profiles need to be reclassified and modified to tackle the limitations facing General Service staff in the mobility and career development framework. An overview of the ICT workforce will be made available to Member States and detailed proposals will be developed in collaboration with the Office for Human Resources Management for approval by the General Assembly at its seventy-first session.

Information and communications technology contracts

52. Analysis has been conducted in relation to defragmentation and the retirement of systems, in order to globally source and ensure that all ICT resources are

optimally managed. A total of 65 per cent of the largest 20 vendors to the United Nations (excluding Umoja-related contracts) provide services in multiple locations managed by various offices independently through separate procurement actions. Voice and data-hosting services are currently subject to value engineering methodologies for greater efficiencies. Integration and collaboration between different technologies, rationalization of wireless services and benchmarking of existing rates and services against other comparable organizations are required. The United Nations will negotiate discounts in infrastructure, licences and services. All new solicitation of ICT services and acquisitions will be subject to review processes in accordance with established governance structures.

Information and communications technology assets

53. Strengthened visibility into tangible and intangible assets across the Secretariat will create stronger control and accountability in respect of all ICT assets. The enterprise resource platform will improve the monitoring of physical, intellectual property and software licences, which are a significant portion of ICT investments. There is an opportunity to transition from individual to enterprise licensing with considerable benefits to the Organization. All physical ICT property will be monitored and controlled throughout the life cycle of each item, from receipt to disposal. For intangible ICT property, including licences, verification will be conducted frequently using discovery methods.

V. Conclusion

54. Technology continues to have a significant impact on the way the mandates of the Organization are delivered and on everyday working practices. The present report demonstrates the progress that has been made in less than a year to modernize and transform ICT in the United Nations. The governance and project assurance frameworks are firmly in place; the mainstreaming of Umoja is proceeding on schedule; activities to strengthen information security and disaster recovery have advanced; improvements have been made to application management, the network and infrastructure, and global engineering and conferencing; the enterprise applications centres, regional technology centres, Enterprise Service Desk and global monitoring are now established; the consolidation of ICT functions across the Organization is ongoing; and business intelligence and analytics have been inaugurated. The assessment of ICT budget and resources indicates future investment requirements, and a joint analysis of the ICT workforce has taken place ahead of the development of proposals, which will be presented to the General Assembly at its seventy-first session. In the meantime, efficiencies have been identified in relation to ICT contracts and assets.

55. Implementation of the strategy in its first year has positioned ICT as an active partner in aligning with the goals of the United Nations, on track now and in the long term, to achieve fully the strategy's mission of a unified global provision of ICT to enable the successful delivery of United Nations mandates.

VI. Action to be taken by the General Assembly

56. The General Assembly is requested to note the detailed information provided on the implementation of all the elements of the Secretary-General's ICT strategy and the indicative five-year overall ICT budget projection for the Secretariat.

Annex I

Timeline of information and communications technology strategy projects

Project name	*Description*	*Start date*	*Finish date*	*Per cent complete*	*Key milestones*
Enterprise Service Desk/ consolidation	Establish a 24 x 7 global support centre for enterprise applications, including Umoja, Inspira, Unite Docs, Unite Connections, iNeed, Earthmed, etc. Consolidate help desks across the Organization	01/01/15	31/12/16	64	• Fully resourced and staffed Enterprise Service Desk (30/09/15) • Technology roll-out (30/09/15) • Establish funding model (31/12/15) • Consolidation of help desks (31/12/16)
Regional technology centres	Establish regional technical centres for Europe, Asia, Africa and the Americas	15/03/15	31/03/17	50	• Deliver ICT support for successful Umoja delivery (31/12/15) • Establish a standardized global ICT network (30/06/16) • Establish procedures to better utilize global contracts (31/12/16) • Harmonization and improvement of ICT service delivery (31/12/16) • Implement Secretariat information security initiatives (31/03/17)
Network and infrastructure upgrade (multiprotocol label switching)	Upgrade the United Nations Secretariat-wide area network to accommodate existing and new enterprise applications	10/05/13	31/12/16	60	• Complete cluster 4 connectivity (30/09/15) • Establish funding model (31/10/15) • Continue to add Secretariat entities (31/12/16)
Global network operations centre — Phase 1	Establishment of an enterprise-level operations centre, which will be globally responsible for detecting changes of state for IT assets (event management) and determining the course of action required to return impacted IT services to an acceptable level for the IT users as quickly as possible (incident management)	11/05/15	31/12/17	25	• Establish physical enterprise monitoring centre (30/11/15) • Establish level of detailed monitoring required per configuration item (30/11/15) • Finalize escalation process (31/12/15) • Add offices away from Headquarters and regional economic commissions to enterprise monitoring (31/12/16) • Expand scope of enterprise monitoring, including disaster recovery/business continuity and security breaches (31/12/17)

Project name	*Description*	*Start date*	*Finish date*	*Per cent complete*	*Key milestones*
Data centre consolidation	To deploy shared infrastructure services and applications to the enterprise data centres	01/12/13	31/12/16	40	• Handover of core operational support activities from regional technology centres to enterprise data centres, i.e. domain name system and directory services support (31/12/15) • Resilient shared database farm in production (30/04/16) • Resilient Unite Docs and Unite Connections in production (30/04/16) • Resilient Inspira in production (31/12/16)
Umoja assessment	Develop a future support model for Umoja (i.e. system support and maintenance, human resources, budget) in preparation for mainstreaming	31/03/15	31/12/15	50	• Data collection (30/09/15) • Develop assessment report (31/10/15) • Validation of assessment report (30/11/15) • Approval of assessment report (31/12/15)
Umoja mainstreaming	Umoja mainstreaming is the transfer of responsibilities from the project to corresponding entities within the Secretariat	01/11/13	31/12/18	25	• Business intelligence and reporting (31/03/16) • Application interfaces (31/03/16) • Enhancements, upgrades, patching, archiving (31/12/18) • Design, development, testing, training, production support (31/12/18) • Project management, contracts and vendor management (31/12/18)
ICT benchmarking assessment	To develop a report on the global ICT assets and data to understand the current state, establish a baseline, provide benchmarking data and identify gaps to maximize savings and services	12/03/15	30/08/15	100	• Data collection for all locations (27/07/15) • Develop assessment report (31/07/15) • Analysis and recommendations (31/07/15) • Approval of assessment report (30/08/15)
Human resources workplace planning and five-year indicative budget	To accommodate assessment of present and future business capabilities of the ICT offices and longer-term planning of human resources of the Secretariat; to prepare a five-year indicative budget	15/02/15	30/08/15	100	• Develop the methodology • Confirm budget methodology with the Controller (30/03/15) • Develop business capabilities analysis and draft a report on human resources assessment and planning (30/06/15) • Develop five-year ICT budget (30/08/15) • Draft General Assembly progress report (30/08/15)

Project name	*Description*	*Start date*	*Finish date*	*Per cent complete*	*Key milestones*
Global sourcing strategy (contracts)	To take inventory of all ICT contracts and assets and identify global sourcing opportunities	19/11/14	28/10/15	60	• Assess inventory of ICT contracts at Headquarters and offices away from Headquarters and identify savings and efficiencies for voice and data communications (31/08/15) • Develop a holistic approach for ICT procurement requirements (30/09/15) • Develop a global ICT sourcing plan, with established standard processes and centralized contract management (28/10/15)
10-point action plan to strengthen security	To strengthen information security across the Secretariat in the areas of prevention, incident detection, response and governance, risk and compliance	01/03/13	31/12/15	60	• Workstation configuration (initiative 1): limit administrative privileges to only those users who require such access to perform their official duties (31/12/15) • Network segmentation (initiative 4): implement segmentation of network zones for data centres/server rooms and user zones in adherence with established architecture and procedures (31/12/15) • Minimum requirements for public websites (initiative 9): ensure that all publicly accessible websites comply with the minimum security requirements (31/12/15) • Incident reporting (initiative 10): establish mechanisms to report information security incidents and to escalate significant incidents to the global information security team (31/12/15) • Report on compliance and exceptions (31/12/15)
Disaster recovery	Develop a Secretariat-wide disaster recovery plan to ensure that critical ICT systems can be effectively failed over in case of an emergency	01/05/13	31/12/15	41	• Review list of Secretariat-wide critical applications (30/09/15) • Revise disaster recovery estimates for critical applications (30/09/15) • Resubmit proposal for disaster recovery for Senior Emergency Policy Team approval (15/11/15)

Project name	*Description*	*Start date*	*Finish date*	*Per cent complete*	*Key milestones*
					• Develop individual disaster recovery plans for critical applications with advanced disaster recovery in place (31/12/15)
Umoja application interfaces	To ensure that existing systems and applications currently supporting administrative business requirements that will not be met by Umoja Foundation and Umoja Extension 1 releases continue to operate and serve their business purpose	01/05/14	31/12/15	45	• Fit gap analysis (31/12/14) • Establish application interface profile registry (18/03/15) • Approve first batch of application interface profiles for cluster 3 by Umoja Change Control Board (22/04/15) • Delivery of first production application interface profile interface (15/05/15) • Delivery of approved application interface profile interfaces to cluster 3 and 4 entities (31/12/15) • Rationalization of application interface profile interfaces and applications (31/12/15)
Application consolidation/ rationalization (phase 1)	To reduce the cost, complexity and redundancy of the applications portfolio and achieve greater alignment with the organizational objectives and technology architecture	01/06/14	01/07/15	100	• Develop methodology (31/03/15) • Assess existing application inventories and collect missing data (30/06/15) • Validate and categorize application information with focal points from United Nations offices/departments (31/03/15) • Develop application road maps and confirm with application owners (31/05/15) • Prepare project report with developed application roadmaps (31/05/15) • Establish application portfolio management repository with business intelligence (30/06/15)
Website consolidation/ rationalization	The future vision for the United Nations Secretariat websites is aimed at increasing the efficiency of the websites operations, web design and security and is intended to bring economies of scale through strategic changes in the current operating model	02/01/14	30/11/17	42	• Develop website technology and plan (18/04/15) • Develop United Nations website consolidation solution (30/06/15) • Harmonization levels 1 and 2: address critical websites (30/06/15) • Harmonization level 3: identify and remediate websites (01/06/16)

Project name	*Description*	*Start date*	*Finish date*	*Per cent complete*	*Key milestones*
					• Harmonization level 4: identify and remediate websites (30/11/17)
Inspira PeopleSoft Upgrade	Upgrade PeopleSoft from 9.0 to 9.2 in order to continue receiving full support from Oracle	14/12/14	30/10/15	60	• Fit gap analysis (29/04/15) • First pass of upgrade (19/06/15) • Rebuild custom functionalities on 9.2 (23/07/15) • Second pass of upgrade (27/07/15) • System integration testing and user acceptance training (02/10/15) • Test move to production (10/10/15) • 9.2 Go-live (30/10/15)
Enterprise risk management	Assess risks, develop a risk matrix, identify, categorize and develop a mitigation strategy for the risks derived from the ICT strategy	27/02/15	31/12/15	40	• Workshops with the Office of Information and Communications Technology, offices away from Headquarters, regional commissions and tribunals (24/04/15) • Finalize transformational risks — Office of the Under-Secretary-General Approval • Workshop with global ICT (08/05/15) • Approved ICT risk matrix (29/05/15) • Implement risk mitigation plan (31/12/15)
ICT policies and procedures	Develop and issue a body of ICT policies and technical procedures	11/04/13	30/09/15	81	• Milestone #1: 29 issued (31/07/15) • Milestone #2: 14 undergoing formal consultation and Information Policy Committee review (30/09/15) • Milestone #2: 3 in drafting stage (30/09/15)
Enterprise business intelligence and analytics	Establish business intelligence and analytics processes, reports, dashboards, standardization and governance for enterprise applications; consolidate and defragment business warehouse environments	01/10/14	31/12/15	55	• Develop strategy and set up data governance council (30/11/14) • Define roles/responsibilities, build capacity, procure SAP HANA licences and install new business intelligence schemas (31/08/15) • Consolidate data for ICT skills assessment (31/08/15)

Project name	*Description*	*Start date*	*Finish date*	*Per cent complete*	*Key milestones*
					• Develop data governance framework and information asset registry (31/12/15)
					• Develop pilot projects: build capacity for Umoja business intelligence and analytics (31/12/15)
Global engineering and conferencing	Set up a global conferencing support framework across the Secretariat	01/06/15	30/09/15	80	• Assign staff to new unit (28/08/15)
					• Issue terms of reference and announcement (30/09/15)

Annex II

Overview of information and communications technology resources for the bienniums 2010-2011 to 2016-2017, including resources for Umoja

(Millions of United States dollars)

ICT resources per biennium	*Regular budget*[a]	*Special political missions*[a]	*Extrabudgetary*[a]	*Support Account*[b]	*Peacekeeping missions*[b]	*Total*	*Umoja*[c]	*Total including Umoja*	*Annual*	*Annual including Umoja*
2010-2011	301.5	Included in regular budget	24.9	144.3	1 048.4	1 519.1	100.7	1 619.8	759.6	809.9
2012-2013	210.6	58.8	24.9	73.8	963.6	1 331.7	137.3	1 469.0	665.9	734.5
2014-2015	240.7	47.4	28.4	60.2	950.7	1 327.4	129.4	1 456.8	663.7	728.4
2016-2017	219.1	47.4	27.0	55.6	901	1 250.1	54.3	1 304.4	625.1	652.5
Total ICT resources, 2010-2017	**971.9**	**153.6**	**105.2**	**333.9**	**3 863.7**	**5 428.3**	**421.7**	**5 850.0**	–	–
Total budgets for 2016-2017e	**5 693.5**	**1 107.2**	**18 901.0**	**613.6**	**16 307.4**	**42 622.7**	**421.7**	**43 044.4**	–	–
ICT 2016-2017 resources vs. 2016-2017 total budgets, percentage	**3.8**	**4.3**	**0.1**	**9.1**	**5.5**	**2.9**	**12.9**	**3.0**	–	–

[a] See table entitled "Resources allocated to information technology" in A/64/6 (Introduction), table 14 in A/68/6 (Introduction), schedule 12 in the annex to A/70/6 (Introduction), which include staff costs based on an analysis of posts dedicated to ICT programmes. As extrabudgetary resources presented in A/68/6 excluded expenditure for ICT-related posts, for the purpose of the present analysis, it is assumed that extrabudgetary resources for the 2010-2011 biennium were kept at the same level as reported for 2012-2013.

[b] See A/C.5/64/15, A/C.5/65/15, A/C.5/66/14, A/C.5/66/18, A/C.5/68/21, A/C.5/68/26 and A/C.5/69/24. As the resources presented in those reports excluded post expenditure for ICT-related posts, for the purpose of the present analysis, it is assumed that staff costs for the bienniums 2012-2013 and 2014-2015 were kept at the same level as those reported for 2010-2011. For the biennium 2014-2015, calculations were made for ICT posts using the standard salary cost for New York. For the biennium 2016-2017, calculations in relation to staff costs are based on a number of posts presented in the 2015/16 budget proposals.

[c] See A/68/327, table 5, excludes staff costs.

[d] See A/68/375 and A/69/385 and Corr.1.

[e] See A/70/6 (Introduction), annex, schedules 2, 3 and 9, A/69/363 (table 7) and A/69/839 (table 4).

Annex III

Trend analysis of information and communications technology staff and non-staff resources for the periods 2014-2015, 2016-2017 and 2018-2019

A. Office of Information and Communications Technology

1. Estimated percentage of workforce dedicated to ICT functional area[a]

	Global Operations Division[b]			*Global Services Division*			*Enterprise Applications Centre, New York*			*Enterprise Applications Centre, Bangkok*		
ICT functional area	*2014-2015*	*2016-2017*	*2018-2019*	*2014-2015*	*2016-2017*	*2018-2019*	*2014-2015*	*2016-2017*	*2018-2019*	*2014-2015*	*2016-2017*	*2018-2019*
Data centre support (servers, storage, disaster recovery, etc.)	23.7	23.7	19.0	7.3	7.3	7.3	–	–	–	–	–	–
Service desk (local area network desktop, help desk, enterprise services, etc.)	27.7	27.7	29.6	–	–	–	15.0	10.0	–	–	–	–
Voice and data (network, satellite, telephony, etc.)	23.1	23.1	19.0	–	–	–	–	–	–	–	–	–
Personal computing hardware (personal computers, printers, scanners, etc.)	6.9	6.9	13.2	–	–	–	–	–	–	–	–	–
Studio production, video conferencing, closed-circuit television, etc.	13.7	13.7	14.2	–	–	–	–	–	–	–	–	–
Information security	–	–	–	34.3	34.3	34.3	–	–	–	–	–	–
Operations support	4.7	4.7	5.0	7.3	5.5	5.6	5.0	–	–	–	–	–
Application development and support	–	–	–	3.7	1.8	1.8	75.0	70.0	80.0	100.0	100.0	100.0
Website	–	–	–	2.7	1.8	1.8	5.0	15.0	10.0	–	–	–
Business intelligence and analytics	–	–	–	24.6	24.6	24.6	–	5.0	10.0	–	–	–
Innovation	–	–	–	9.1	11.0	11.9	–	–	–	–	–	–
Geographic information systems	–	–	–	–	2.7	2.7	–	–	–	–	–	–
Governance and compliance	–	–	–	11.0	11.0	11.0	–	–	–	–	–	–
Enterprise Project Management Office	–	–	–	–	–	–	–	–	–	–	–	–
Other	0.2	0.2	–	–	–	–	–	–	–	–	–	–
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

2. Estimated percentage of non-staff ICT budget dedicated to ICT functional area[a]

ICT functional area	Global Operations Division			Global Services Division			Enterprise Applications Centre, New York			Enterprise Applications Centre, Bangkok		
	2014-2015	2016-2017	2018-2019	2014-2015	2016-2017	2018-2019	2014-2015	2016-2017	2018-2019	2014-2015	2016-2017	2018-2019
Data centre support (servers, storage, disaster recovery, etc.)	23.9	23.9	18.3	22.0	22.0	10.0	60.0	55.0	50.0	–	–	–
Service desk (local area network, desktop, help desk, enterprise services, etc.)	28.5	27.5	28.3	–	–	–	–	–	–	–	–	–
Voice and data (network, satellite, telephony, etc.)	25.7	26.7	28.3	–	–	–	–	–	–	–	–	–
Personal computing hardware (personal computers, printers, scanners, etc.)	8.2	8.2	9.2	–	–	–	–	–	–	–	–	–
Studio production, video conferencing, closed-circuit television, etc.	10.3	10.3	10.4	–	–	–	–	–	–	–	–	–
Information security	–	–	2.4	24.0	19.0	19.0	–	–	–	–	–	–
Operations support	–	–	–	–	–	–	–	–	–	–	–	–
Application development and support	–	–	–	–	–	–	30.0	25.0	25.0	100.0	100.0	100.0
Website	–	–	–	–	–	–	5.0	10.0	10.0	–	–	–
Business intelligence and analytics	–	–	–	10.0	15.0	15.0	5.0	10.0	15.0	–	–	–
Innovation	3.4	3.4	3.1	14.0	14.0	20.0	–	–	–	–	–	–
Geographic information systems	–	–	–	30.0	30.0	36.0	–	–	–	–	–	–
Governance and compliance	–	–	–	–	–	–	–	–	–	–	–	–
Enterprise Project Management Office	–	–	–	–	–	–	–	–	–	–	–	–
Other	–	–	–	–	–	–	–	–	–	–	–	–
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

[a] Per cent rounded to the next whole number.

[b] "Global Operations Division" includes projections for telephony under data centre support.

B. Offices away from Headquarters

1. Estimated percentage of workforce dedicated to ICT functional area[a]

ICT functional area	United Nations Office at Vienna[b]			United Nations Office at Geneva			United Nations Office at Nairobi		
	2014-2015	2016-2017	2018-2019	2014-2015	2016-2017	2018-2019	2014-2015	2016-2017	2018-2019
Data centre support (servers, storage, disaster recovery, etc.)	5.0	4.0	2.0	2.0	3.0	3.0	8.0	7.0	5.0
Service desk (local area network, desktop, help desk, enterprise services, etc.)	7.0	6.0	2.0	14.0	15.0	18.0	28.0	36.0	30.0
Voice and data (network, satellite, telephony, etc.)	5.0	5.0	2.0	39.0	34.0	32.0	5.0	5.0	5.0
Personal computing hardware (personal computers, printers, scanners, etc.)	5.0	5.0	5.0	6.0	6.0	6.0	28.0	16.0	15.0
Studio production, video conferencing, closed-circuit television, etc.	5.0	5.0	7.0	3.0	3.0	3.0	–	–	–
Information security	1.0	1.0	3.0	1.0	3.0	4.0	1.0	5.0	9.0
Operations support	16.0	15.0	13.0	9.0	8.0	6.0	5.0	11.0	15.0
Application development and support	40.0	42.0	44.0	11.0	9.0	7.0	14.0	6.0	5.0
Website	4.0	3.0	2.0	1.0	1.0	1.0	4.0	3.0	2.0
Business intelligence and analytics	6.0	8.0	13.0	0.0	1.0	3.0	2.0	3.0	5.0
Innovation	1.0	1.0	3.0	1.0	2.0	2.0	1.0	2.0	2.0
Geographic information systems	–	–	–	–	–	–	–	–	–
Governance and compliance	4.0	4.0	4.0	3.0	6.0	6.0	2.0	4.0	5.0
Enterprise Project Management Office	1.0	1.0	–	5.0	3.0	1.0	2.0	2.0	2.0
Other	–	–	–	5.0	6.0	8.0	–	–	–
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

2. Estimated percentage of non-staff ICT budget dedicated to ICT functional area[a]

ICT functional area	United Nations Office at Vienna			United Nations Office at Geneva			United Nations Office at Nairobi		
	2014-2015	2016-2017[b]	2018-2019	2014-2015	2016-2017[b]	2018-2019	2014-2015	2016-2017	2018-2019
Data centre support (servers, storage, disaster recovery, etc.)	17.1	17.0	13.5	9.0	9.0	9.0	4.0	4.0	2.0
Service desk (local area network desktop, help desk, enterprise services, etc.)	8.1	8.1	6.7	4.0	5.0	5.0	20.0	25.0	25.0
Voice and data (network, satellite, telephony, etc.)	12.2	12.1	12.6	74.5	71.0	70.0	40.0	25.0	25.0
Personal computing hardware (personal computers, printers, scanners, etc.)	9.8	9.7	10.1	5.0	4.0	4.0	25.0	25.0	25.0
Studio production, video conferencing, closed-circuit television, etc.	4.1	4.8	8.4	5.0	5.0	5.0	–	–	–
Information security	4.1	4.8	12.6	0.5	1.0	2.0	1.0	3.0	5.0
Operations support	36.6	31.5	21.1	0.5	–	–	–	10.0	12.0
Application development and support	4.0	8.0	10.0	0.5	0.5	0.5	6.0	3.0	2.0
Website	1.0	1.0	1.0	–	–	–	3.0	2.0	1.0
Business intelligence and analytics	1.0	1.0	3.0	–	1.0	1.0	1.0	2.0	2.0
Innovation	–	–	–	–	1.0	1.0	–	–	–
Geographic information systems	–	–	–	–	–	–	–	–	–
Governance and compliance	1.0	1.0	1.0	0.5	1.0	1.0	–	1.0	1.0
Enterprise Project Management Office	1.0	1.0	–	0.5	0.5	0.5	–	–	–
Other	–	–	–	–	1.0	1.0	–	–	–
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

[a] Per cent rounded to the next whole number.
[b] Includes extrabudgetary resources.

C. Economic and social commissions

1. Estimated percentage of workforce dedicated to ICT functional area[a]

ICT functional area	Economic Commission for Africa			Economic and Social Commission for Asia and the Pacific			Economic Commission for Europe			Economic Commission for Latin America and the Caribbean			Economic and Social Commission for Western Asia		
	2014-2015	2016-2017	2018-2019	2014-2015	2016-2017	2018-2019	2014-2015	2016-2017	2018-2019	2014-2015	2016-2017	2018-2019	2014-2015	2016-2017	2018-2019
Data centre support (servers, storage, disaster recovery, etc.)	12	10	10	62	60	57	25	20	15	75	67	52	19	16	12
Service desk (local area network, desktop, help desk, enterprise services, etc.)	26	20	20	0	0	0	0	0	0	0	0	0	25	26	20
Voice and data (network, satellite, telephony, etc.)	13	12	12	0	0	0	0	0	0	0	0	0	8	8	8
Personal computing hardware (personal computers, printers, scanners, etc.)	10	8	8	0	0	0	0	0	0	0	0	0	0	0	0
Studio production, video conferencing, closed-circuit television, etc.	6	6	6	0	0	0	0	0	0	0	0	0	4	4	4
Information security	2	4	4	0	0	0	0	0	0	0	0	0	3	3	3
Operations support	13	10	10	0	0	0	0	0	0	0	0	0	10	6	5
Application development and support	8	6	6	0	0	0	70	75	80	23	29	41	7	7	10
Website	2	4	4	32	33	36	0	0	0	0	0	0	3	3	3
Business intelligence and analytics	0	4	4	0	0	0	0	0	0	0	0	0	6	6	10
Innovation	0	2	2	0	0	0	0	0	0	0	0	0	4	4	0
Geographic information systems	2	4	4	0	0	0	0	0	0	0	0	0	0	0	0
Governance and compliance	2	4	4	5	7	6	5	5	5	2	4	7	4	4	5
Enterprise Project Management Office	4	6	6	0	0	0	0	0	0	0	0	0	9	10	20
Other	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

2. Estimated percentage of non-staff ICT budget dedicated to ICT functional area[a]

ICT functional area	Economic Commission for Africa			Economic and Social Commission for Asia and the Pacific			Economic Commission for Europe			Economic Commission for Latin America and the Caribbean			Economic and Social Commission for Western Asia		
	2014–2015	2016–2017	2018–2019	2014–2015	2016–2017	2018–2019	2014–2015	2016–2017	2018–2019	2014–2015	2016–2017	2018–2019	2014–2015	2016–2017	2018–2019
Data centre support (servers, storage, disaster recovery, etc.)	12.7	10.4	10.4	94.9	86.9	82.8	60.0	53.0	53.0	82.0	76.0	70.0	25.5	19.8	16.0
Service desk (local area network, desktop, help desk, enterprise services, etc.)	8.5	7.0	7.0	–	–	–	–	–	–	–	–	–	8.6	9.6	9.0
Voice and data (network, satellite, telephony, etc.)	25.4	24.3	24.3	–	–	–	–	–	–	–	–	–	32.4	32.5	30.0
Personal computing hardware (personal computers, printers, scanners, etc.)	16.9	14.8	14.8	–	–	–	–	–	–	–	–	–	26.1	23.2	25.0
Studio production, video conferencing, closed-circuit television, etc.	6.8	7.0	7.0	–	–	–	–	–	–	–	–	–	0.4	0.6	3.0
Information security	8.5	10.4	10.4	–	–	–	–	–	–	–	–	–	2.2	2.1	3.0
Operations support	4.2	6.1	6.1	–	–	–	–	–	–	–	–	–	–	–	–
Application development and support	10.0	7.0	7.0	3.4	10.4	13.5	40.0	45.0	45.0	18.0	20.0	25.0	0.5	0.9	1.0
Website	2.0	5.0	5.0	–	–	–	–	–	–	–	–	–	1.5	–	1.0
Business intelligence and analytics	5.0	8.0	8.0	–	–	–	–	–	–	–	–	–	0.6	0.6	1.0
Innovation	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Geographic information systems	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Governance and compliance	–	–	–	1.7	2.7	3.7	–	2.0	2.0	–	4.0	5.0	–	–	–
Enterprise Project Management Office	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Other	–	–	–	–	–	–	–	–	–	–	–	–	2.2	10.7	11.0
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

[a] Per cent rounded to the next whole number.